

## PATENT ABSTRACTS OF JAPAN

(11) Publication number : 08-314606  
 (43) Date of publication of application : 29.11.1996

(51) Int. Cl. G06F 3/023

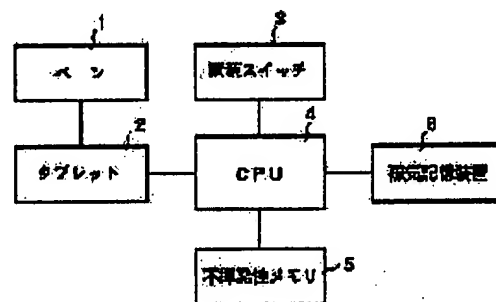
(21) Application number : 07-115566 (71) Applicant : NEC CORP  
 (22) Date of filing : 15.05.1995 (72) Inventor : HANAMAKI JIYUN

## (54) INPUT TERMINAL DEVICE

## (57) Abstract:

PURPOSE: To provide the input terminal equipment which can input a password without using a character recognizing function or virtual keyboard function.

CONSTITUTION: A tablet 2 informs a CPU 4 of whether a pen 1 comes into contact at constant intervals of  $t_c$  sec. A nonvolatile memory 5 is stored previously with a secrecy protecting function program and the password. A magnetic storage device 6 is stored with an operating system and an application program. The CPU 4 counts how many taps (short time contact) of a pen 1 on a tablet 2 from one tap to another tap is less than  $n_s$  sec. ( $n_s > t_c$ ) there are, and recounts taps newly when the off time interval exceeds  $n_s$  sec. When there is no tap for a specific time  $m_e$  sec. ( $m_e \cdot n_s$ ), it is decided that the input of the password is completed.



## LEGAL STATUS

[Date of request for examination] 15.05.1995

[Date of sending the examiner's decision of rejection]

[Kind of final disposal of application other than the examiner's decision of rejection or application converted registration]

[Date of final disposal for application]

[Patent number] 2713227

[Date of registration] 31.10.1997

[Number of appeal against examiner's decision of rejection]

[Date of requesting appeal against examiner's decision of rejection]

[Date of extinction of right]

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 CLAIMS
 

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[Claim(s)]

[Claim 1] The input terminal unit characterized by providing the following. A detecting-signal output means to output periodically the detecting signal which shows the existence of the contact to the tablet or touch panel of a pen or a finger after powering on. An analysis means to analyze the password inputted with the combination of the time interval and the number of times of a tap which carry out the tap of a tablet or the touch panel intermittently with a pen or a finger based on the aforementioned detecting signal. A judgment means to judge coincidence with the password obtained by this analysis means, and the password registered beforehand.

[Claim 2] It is more than the 1st time  $n_s$ , the number of times of a tap into which the aforementioned analysis means was inputted by the time interval within the 1st time  $n_s$  -- as the value of the aforementioned password -- counting -- a tap -- this -- And when inputted following the last tap after the time within the 2nd time  $n_e$  ( $\text{second} \leq n_e$ ), the number of times of a tap is newly recounted as a value of the next digit of the aforementioned password. a tap -- this -- the input terminal unit according to claim 1 characterized by judging it as a password input end when not inputted more than the 2nd time  $n_e$

[Claim 3] The input terminal unit according to claim 1 characterized by starting an operating system, and reading and performing an application program after that only when judged with password coincidence by the aforementioned judgment means.

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## DETAILED DESCRIPTION

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### [Detailed Description of the Invention]

[0001]

[Industrial Application] this invention relates to an input terminal unit, especially writes a character etc. to a tablet with a pen, and relates to the input terminal unit which recognizes it and is inputted into a computer etc.

[0002]

[Description of the Prior Art] Conventionally, the keyboard, the pen input terminal unit, etc. are used as an input unit of terminal units, such as a computer. On the other hand, inputting a password as a security mechanism of terminal units, such as a computer, is performed. As this security mechanism, there are some as which the computer has adopted the method which judges whether the input password is inputted correctly, will be made to start an operating system when inputted correctly, and will execute a program if a password is inputted from a keyboard after powering on.

[0003] By this security mechanism, if a password is not inputted correctly, since a terminal unit does not operate, it has the advantage that those whom a password does not know cannot use it, the contents, such as magnetic storage and memory, cannot be seen, or it cannot rewrite, or cannot eliminate.

[0004] On the other hand, instead of inputting a character by the keyboard, when it is going to operate this security mechanism instead of a keyboard using a pen input terminal unit, by carrying out character recognition of it, a character will actually be written to a tablet, ink data are changed into a text character or a character code, a password will be inputted or a password will be inputted by displaying a virtual keyboard and carrying out the tap of it.

[0005]

[Problem(s) to be Solved by the Invention] However, in the above-mentioned conventional pen input terminal unit, if the above-mentioned security mechanism is used, in order to operate a character recognition function and a virtual keyboard function, without using an operating system, there is a problem that it is difficult to operate this security mechanism.

[0006] this invention was not made in view of the above-mentioned point, and aims at offering the input terminal unit which can input a password, without using a character recognition function and a virtual keyboard function.

[0007]

[Means for Solving the Problem] A detecting-signal output means to output periodically the detecting signal which shows the existence of the contact to the tablet or touch panel of a pen or a finger after powering on in order to attain the above-mentioned purpose, An analysis means to analyze the password inputted with the combination of the time interval and the number of times of a tap which carry out the tap of a tablet or the touch panel intermittently with a pen or a finger based on a detecting signal, It considers as the composition which has a judgment means to judge coincidence with the obtained by the analysis means, and the password registered beforehand.

[0008] Moreover, in this invention, an analysis means counts the number of times of a tap inputted at the time interval within the 1st time  $n_s$  as a value of a password, and a tap is more than the 1st time  $n_s$ . And when inputted following the last tap after the time within the 2nd time  $n_e$  (second  $\leq n_e$ ), the number of times of a tap is newly recounted as a value of the next digit of a password. It is desirable to judge it as a password input end, when a tap is not inputted more than the 2nd time  $n_e$  at the point that the password of two or more figures can be inputted.

[0009] Furthermore, in this invention, only when judged with password coincidence by the judgment means, an operating system is started and it is characterized by reading and performing an application program after that.

[0010]

[Function] In this invention, the detecting signal which shows the existence of the contact to the tablet of a pen or the existence of the contact to the touch panel of a finger is outputted periodically, and since the combination of the time interval and the number of times of a tap which are detected based on this detecting signal and which carry out the tap of the tablet etc. intermittently with a pen etc. was inputted as a password, the input of a password can be performed, without

using a character recognition function and a virtual keyboard function.

[0011] Moreover, in this invention, since an operating system is started for the first time, an application program is read after that and it performs when judged with password coincidence, the same security mechanism as having inputted the password from the keyboard can be used.

[0012]

[Example] Next, the example of this invention is explained with a drawing. Drawing 1 shows the block diagram of one example of the input terminal unit which becomes this invention. As shown in this drawing, this example consists of a pen 1, a tablet 2, an electric power switch 3, a central processing unit (CPU) 4, non-volatile memory 5, and magnetic storage 6.

[0013] Although a tablet 2 is composition which outputs the X-Y coordinate of the position where the pen 1 contacted to CPU4, in this example, it considers as the composition which notifies to CPU4 whether the pen 1 touches for every fixed time  $t_c$  second further. Moreover, the security functional program and the password are beforehand memorized by non-volatile memory 5. Furthermore, the operating system and the application program are recorded on magnetic storage 6.

[0014] Next, the flow chart of drawing 2 is combined, referred to and explained about operation of this example. First, if the electric power switch 3 of drawing 1 is turned ON (Step 11), from non-volatile memory 5, a security functional program will be read, it will be performed to the processing which inputs a password, and, as for CPU4, the input of a password will be demanded from an operator (Step 12).

[0015] Thereby, an operator inputs a password by the number of times and the time interval which carry out the tap of the tablet 2 with a pen 1 (Step 13). That is, when it counts how many times of taps whose time interval of OFF was less than  $n_s$  second ( $n_s > t_c$ ) after a pen 1 carries out short-time contact (tap) to a tablet 2 very much until it next carried out the tap there were and the time interval of the above-mentioned OFF becomes more than  $n_s$  second, the number of times of a tap is newly recounted. Moreover, when there is more than no predetermined-time  $n_e$  second [ tap ] ( $n_e \geq n_s$ ), it judges with the password input having been completed.

[0016] An example of the method of inputting a password by carrying out the tap of the tablet 2 with this pen 1 is further explained with drawing 3. In the example shown in drawing 3, after a pen 1 carries out a tap (a pen 1 turns on) to a tablet 2 first before carrying out a tap next, time  $n_1$  passes, a tap is hereafter carried out a total of 9 times by time intervals  $n_2$ ,  $n_3$ ,  $n_4$ ,  $n_5$ ,  $n_6$ ,  $n_7$ , and  $n_8$ , and it is shown that nine or more [ time  $n$  ] have passed after the 9th tap.

[0017] If there shall be  $n_1 < n_s$ ,  $n_2 < n_s$ ,  $n_3 < n_s$ ,  $n_s < n_4 < n_e$ ,  $n_5 < n_s$ ,  $n_6 < n_s$ ,  $n_s < n_7 < n_e$ ,  $n_8 < n_s$ , and the relation it is unrelated  $n_e < n_9$  to each of  $n_1$ - $n_9$ , here There are four taps within  $n_s$  second just before the time interval  $n_4$  more than the first  $n_s$  second.  $n$  -- there being three taps within  $n_s$  second just before the time interval  $n_7$  more than the next  $n_s$  second after [ 4 ], and there being two taps within  $n_s$  second just before the time interval  $n_9$  more than the last after [  $n_7$  ]  $n_s$  second, and, since  $n_9$  is more than a time  $n_e$  second Since it is judged as a password input end, the password in this case is set to "432" after all.

[0018] When CPU4 collates whether it is the same as the password which the password which changed the detecting signal of the existence of the tap from a tablet 2 into the password, and changed and obtained it like the above read from non-volatile memory 5 and which is registered beforehand (Step 14) and differ returning to drawing 1 and drawing 2 again, and explaining, an operator is again urged to input a password. And processing of the above-mentioned steps 13 and 14 is repeated until it is in agreement with the password with which the password is registered.

[0019] Thus, when it judges with CPU4 being the same as the password which the password which was changed and was obtained from the detecting signal of the existence of the tap from a tablet 2 read from non-volatile memory 5 and which is registered beforehand, an operating system (OS) is read and started from magnetic storage 6, and an application program is read and performed after that (Step 15).

[0020] Thus, since it is made to input a password in the combination of the number of times which carries out the tap of the tablet 2 with a pen 1 according to this example, even if it operates neither a character recognition function nor a virtual keyboard function, a password can be inputted, and the same security mechanism as terminal units, such as a computer, can be realized.

[0021] In addition, this invention is not limited to the above-mentioned example, and can be applied also to the input terminal unit which inputs the coordinate of the position which pressurized the touch panel with the finger, the stylus pen, etc.

[0022]

[Effect of the Invention] Since the input of a password can be performed according to this invention, without using a character recognition function and a virtual keyboard function by inputting as a password the combination of the time interval and the number of times of a tap which carry out the tap of the tablet etc. intermittently with a pen etc. as

explained above, the input of a password can be performed as well as a keyboard if it does not use an operating system.  
[0023] Moreover, since according to this invention an operating system is started for the first time, an application program is read after that and it performs when judged with password coincidence, the same security mechanism as terminal units, such as the present computer, is realizable.

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TECHNICAL FIELD

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[Industrial Application] this invention relates to an input terminal unit, especially writes a character etc. to a tablet with a pen, and relates to the input terminal unit which recognizes it and is inputted into a computer etc.

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PRIOR ART

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[Description of the Prior Art] Conventionally, the keyboard, the pen input terminal unit, etc. are used as an input unit of terminal units, such as a computer. On the other hand, inputting a password as a security mechanism of terminal units, such as a computer, is performed. As this security mechanism, there are some as which the computer has adopted the method which judges whether the input password is inputted correctly, will be made to start an operating system when inputted correctly, and will execute a program if a password is inputted from a keyboard after powering on.

[0003] By this security mechanism, if a password is not inputted correctly, since a terminal unit does not operate, it has the advantage that those whom a password does not know cannot use it, the contents, such as magnetic storage and memory, cannot be seen, or it cannot rewrite, or cannot eliminate.

[0004] On the other hand, instead of inputting a character by the keyboard, when it is going to operate this security mechanism instead of a keyboard using a pen input terminal unit, by carrying out character recognition of it, a character will actually be written to a tablet, ink data are changed into a text character or a character code, a password will be inputted or a password will be inputted by displaying a virtual keyboard and carrying out the tap of it.

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**EFFECT OF THE INVENTION**

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[Effect of the Invention] Since the input of a password can be performed according to this invention, without using a character recognition function and a virtual keyboard function by inputting as a password the combination of the time interval and the number of times of a tap which carry out the tap of the tablet etc. intermittently with a pen etc. as explained above, the input of a password can be performed as well as a keyboard if it does not use an operating system.

[0023] Moreover, since according to this invention an operating system is started for the first time, an application program is read after that and it performs when judged with password coincidence, the same security mechanism as terminal units, such as the present computer, is realizable.

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**TECHNICAL PROBLEM**

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[Problem(s) to be Solved by the Invention] However, in the above-mentioned conventional pen input terminal unit, if the above-mentioned security mechanism is used, in order to operate a character recognition function and a virtual keyboard function, without using an operating system, there is a problem that it is difficult to operate this security mechanism. [0006] this invention was not made in view of the above-mentioned point, and aims at offering the input terminal unit which can input a password, without using a character recognition function and a virtual keyboard function.

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**MEANS**

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[Means for Solving the Problem] A detecting-signal output means to output periodically the detecting signal which shows the existence of the contact to the tablet or touch panel of a pen or a finger after powering on in order to attain the above-mentioned purpose, An analysis means to analyze the password inputted with the combination of the time interval and the number of times of a tap which carry out the tap of a tablet or the touch panel intermittently with a pen or a finger based on a detecting signal, It considers as the composition which has a judgment means to judge coincidence with the obtained by the analysis means, and the password registered beforehand.

[0008] Moreover, in this invention, an analysis means counts the number of times of a tap inputted at the time interval within the 1st time  $n_s$  as a value of a password, and a tap is more than the 1st time  $n_s$ . And when inputted following the last tap after the time within the 2nd time  $n_e$  ( $\text{second} \leq n_e$ ), the number of times of a tap is newly recounted as a value of the next digit of a password. It is desirable to judge it as a password input end, when a tap is not inputted more than the 2nd time  $n_e$  at the point that the password of two or more figures can be inputted.

[0009] Furthermore, in this invention, only when judged with password coincidence by the judgment means, an operating system is started and it is characterized by reading and performing an application program after that.

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**OPERATION**

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[Function] In this invention, the detecting signal which shows the existence of the contact to the tablet of a pen or the existence of the contact to the touch panel of a finger is outputted periodically, and since the combination of the time interval and the number of times of a tap which are detected based on this detecting signal and which carry out the tap of the tablet etc. intermittently with a pen etc. was inputted as a password, the input of a password can be performed, without using a character recognition function and a virtual keyboard function.

[0011] Moreover, in this invention, since an operating system is started for the first time, an application program is read after that and it performs when judged with password coincidence, the same security mechanism as having inputted the password from the keyboard can be used.

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[Example] Next, the example of this invention is explained with a drawing. Drawing 1 shows the block diagram of one example of the input terminal unit which becomes this invention. As shown in this drawing, this example consists of a pen 1, a tablet 2, an electric power switch 3, a central processing unit (CPU) 4, non-volatile memory 5, and magnetic storage 6.

[0013] Although a tablet 2 is composition which outputs the X-Y coordinate of the position where the pen 1 contacted to CPU4, in this example, it considers as the composition which notifies to CPU4 whether the pen 1 touches for every fixed time to second further. Moreover, the security functional program and the password are beforehand memorized by non-volatile memory 5. Furthermore, the operating system and the application program are recorded on magnetic storage 6.

[0014] Next, the flow chart of drawing 2 is combined, referred to and explained about operation of this example. First, if the electric power switch 3 of drawing 1 is turned ON (Step 11), from non-volatile memory 5, a security functional program will be read, it will be performed to the processing which inputs a password, and, as for CPU4, the input of a password will be demanded from an operator (Step 12).

[0015] Thereby, an operator inputs a password by the number of times and the time interval which carry out the tap of the tablet 2 with a pen 1 (Step 13). That is, when it counts how many times of taps whose time interval of OFF was less than ns second (second>>tc) after a pen 1 carries out short-time contact (tap) to a tablet 2 very much until it next carried out the tap there were and the time interval of the above-mentioned OFF becomes more than ns second, the number of times of a tap is newly recounted. Moreover, when there is more than no predetermined-time ne second [ tap ] (ne>=ns), it judges with the password input having been completed.

[0016] An example of the method of inputting a password by carrying out the tap of the tablet 2 with this pen 1 is further explained with drawing 3 . In the example shown in drawing 3 , after a pen 1 carries out a tap (a pen 1 turns on) to a tablet 2 first before carrying out a tap next, time n1 passes, a tap is hereafter carried out a total of 9 times by time intervals n2, n3, n4, n5, n6, n7, and n8, and it is shown that nine or more [ time n ] have passed after the 9th tap.

[0017] If there shall be  $n1 < ns$ ,  $n2 < ns$ ,  $n3 < ns$ ,  $ns < n4 < ne$ ,  $n5 < ns$ ,  $n6 < ns$ ,  $ns < n7 < ne$ ,  $n8 < ns$ , and the relation it is unrelated  $ne < n9$  to each of  $n1-n9$ , here There are four taps within  $ns$  second just before the time interval  $n4$  more than the first  $ns$  second.  $n$  -- there being three taps within  $ns$  second just before the time interval  $n7$  more than the next  $ns$  second after [ 4 ], and there being two taps within  $ns$  second just before the time interval  $n9$  more than the last after [  $n7$  ]  $ns$  second, and, since  $n9$  is more than a time  $ne$  second Since it is judged as a password input end, the password in this case is set to "432" after all.

[0018] When CPU4 collates whether it is the same as the password which the password which changed the detecting signal of the existence of the tap from a tablet 2 into the password, and changed and obtained it like the above read from non-volatile memory 5 and which is registered beforehand (Step 14) and differ returning to drawing 1 and drawing 2 again, and explaining, an operator is again urged to input a password. And processing of the above-mentioned steps 13 and 14 is repeated until it is in agreement with the password with which the password is registered.

[0019] Thus, when it judges with CPU4 being the same as the password which the password which was changed and was obtained from the detecting signal of the existence of the tap from a tablet 2 read from non-volatile memory 5 and which is registered beforehand, an operating system (OS) is read and started from magnetic storage 6, and an application program is read and performed after that (Step 15).

[0020] Thus, since it is made to input a password in the combination of the number of times which carries out the tap of the tablet 2 with a pen 1 according to this example, even if it operates neither a character recognition function nor a virtual keyboard function, a password can be inputted, and the same security mechanism as terminal units, such as a computer, can be realized.

[0021] In addition, this invention is not limited to the above-mentioned example, and can be applied also to the input

terminal unit which inputs the coordinate of the position which pressurized the touch panel with the finger, the stylus pen, etc.

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DESCRIPTION OF DRAWINGS

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[Brief Description of the Drawings]

[Drawing 1] It is the block diagram of one example of this invention.

[Drawing 2] It is the flow chart for explanation of operation of one example of this invention.

[Drawing 3] It is explanatory drawing of the important section of drawing 1 of operation.

[Description of Notations]

- 1 Pen
  - 2 Tablet
  - 3 Electric Power Switch
  - 4 Central Processing Unit (CPU)
  - 5 Non-volatile Memory
  - 6 Magnetic Storage
- 

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## \* NOTICES \*

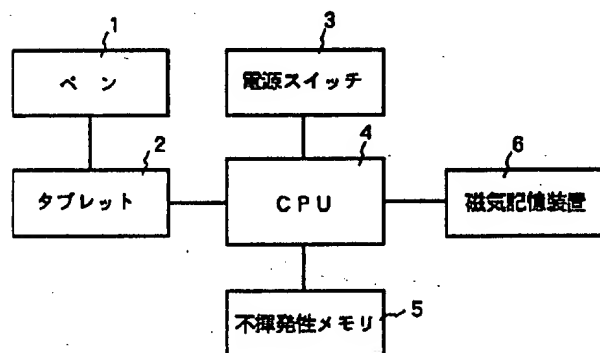
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## DRAWINGS

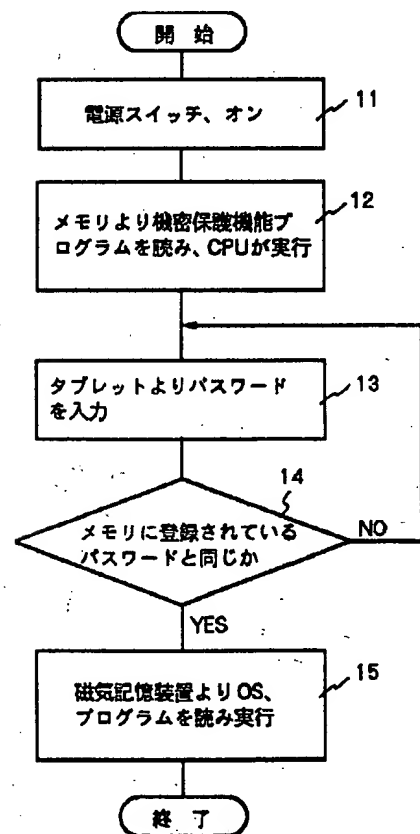
[Drawing 1]

本発明の一実施例のブロック図



[Drawing 2]

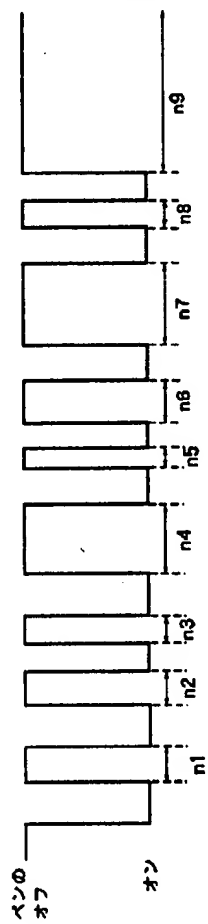
本発明の一実施例の動作説明用フローチャート





[Drawing 3]

本発明の一実施例の要部の動作説明図



[Translation done.]

fritz Alphonse  
2675

(19) 日本国特許庁 (J P)

(12) 公開特許公報 (A)

(11) 特許出願公開番号

特開平8-314606

(43) 公開日 平成8年(1996)11月29日

(51) Int. Cl. <sup>6</sup>	識別記号	庁内整理番号	F I	技術表示箇所
G 0 6 F 3/023	3 4 0		G 0 6 F 3/023	3 4 0 Z

審査請求 有 請求項の数 3 O L (全 4 頁)

(21) 出願番号 特願平7-115566

(22) 出願日 平成7年(1995)5月15日

(71) 出願人 000004237

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(74) 代理人 弁理士 松浦 兼行

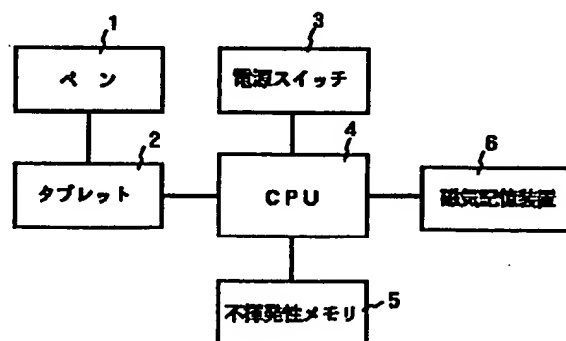
(54) 【発明の名称】 入力端末装置

(57) 【要約】

【目的】 本発明は、文字認識機能や仮想キーボード機能を使用せずに、パスワードを入力し得る入力端末装置を提供することを目的とする。

【構成】 タブレット2は一定時間 $t_0$ 秒毎にペン1が接触しているか否かをCPU4へ通知する構成とされている。不揮発性メモリ5には、予め機密保護機能プログラム及びパスワードが記憶されている。磁気記憶装置6には、オペレーティングシステムやアプリケーションプログラムが記録されている。CPU4は、タブレット2の出力信号に基づき、ペン1がタブレット2にごく短時間接触（タップ）してから次にタップするまでのオフの時間間隔が $n_0$ 秒（ $n_0 \geq t_0$ ）以内であったタップが何回あったかを数え、かつ、オフの時間間隔が $n_0$ 秒以上になった場合は新たにタップ回数を数え直す。また、タップが所定時間 $n_0$ 秒（ $n_0 \geq n_0$ ）以上なかった場合は、パスワード入力が終了したと判定する。

本発明の一実施例のブロック図



## 【特許請求の範囲】

【請求項1】 電源投入後、ペン又は指のタブレット又はタッチパネルへの接触の有無を示す検出信号を定期的に出力する検出信号出力手段と、

前記検出信号に基づきペン又は指でタブレット又はタッチパネルを間欠的にタップする時間間隔とタップ回数との組合せにより入力されたパスワードを解析する解析手段と、

該解析手段により得られたパスワードと予め登録されたパスワードとの一致を判定する判定手段とを有することを特徴とする入力端末装置。

【請求項2】 前記解析手段は、第1の時間 $n_1$ 以内の時間間隔で入力されたタップ回数を前記パスワードの値として数え、タップが該第1の時間 $n_1$ 以上で、かつ第2の時間 $n_2$  ( $n_2 \leq n_1$ ) 以内の時間後に前回のタップに続いて入力されたときには前記パスワードの次の桁の値としてタップ回数を新たに数え直し、タップが該第2の時間 $n_2$ 以上入力されないときにはパスワード入力終了と判断することを特徴とする請求項1記載の入力端末装置。

【請求項3】 前記判定手段によりパスワード一致と判定されたときにのみ、オペレーティングシステムを起動し、その後アプリケーションプログラムを読み込み実行することを特徴とする請求項1記載の入力端末装置。

## 【発明の詳細な説明】

## 【0001】

【産業上の利用分野】 本発明は入力端末装置に係り、特にタブレットにペンで文字などを書き、それを認識してコンピュータ等に入力する入力端末装置に関する。

## 【0002】

【従来の技術】 従来より、コンピュータ等の端末装置の入力装置としてキーボードやペン入力端末装置などが用いられている。一方、コンピュータ等の端末装置の機密保護機構としてパスワードを入力することが行われる。この機密保護機構として、コンピュータが電源投入後にキーボードからパスワードが入力されると、入力パスワードが正しく入力されているかどうか判定し、正しく入力されているときにはオペレーティングシステムを起動させて、プログラムを実行する方式を採用しているものがある。

【0003】 この機密保護機構では、パスワードが正しく入力されなければ端末装置は動作しないので、パスワードが知らない人が使用したり、磁気記憶装置やメモリなどの内容を見たり、書き換えたり、消去することはできないという利点がある。

【0004】 一方、この機密保護機構をキーボードの代わりにペン入力端末装置を使用して作動しようとする場合は、キーボードで文字を入力する代わりに、タブレットに実際に文字を書き、それを文字認識することによってインクデータをテキスト文字や文字コードに変換して

パスワードを入力したり、仮想キーボードを表示してそれをタップすることでパスワードを入力することになる。

## 【0005】

【発明が解決しようとする課題】 しかるに、上記の従来のペン入力端末装置では、上記の機密保護機構を使用すると、文字認識機能や仮想キーボード機能をオペレーティングシステムを使用せずに動作させる必要があるため、この機密保護機構を動作させるのは困難であるという問題がある。

【0006】 本発明は上記の点に鑑みなされたもので、文字認識機能や仮想キーボード機能を使用せずに、パスワードを入力し得る入力端末装置を提供することを目的とする。

## 【0007】

【課題を解決するための手段】 上記の目的を達成するため、電源投入後、ペン又は指のタブレット又はタッチパネルへの接触の有無を示す検出信号を定期的に出力する検出信号出力手段と、検出信号に基づきペン又は指でタブレット又はタッチパネルを間欠的にタップする時間間隔とタップ回数との組合せにより入力されたパスワードを解析する解析手段と、解析手段により得られたパスワードと予め登録されたパスワードとの一致を判定する判定手段とを有する構成としたものである。

【0008】 また、本発明では解析手段は、第1の時間 $n_1$ 以内の時間間隔で入力されたタップ回数をパスワードの値として数え、タップが第1の時間 $n_1$ 以上で、かつ第2の時間 $n_2$  ( $n_2 \leq n_1$ ) 以内の時間後に前回のタップに続いて入力されたときにはパスワードの次の桁の値としてタップ回数を新たに数え直し、タップが第2の時間 $n_2$ 以上入力されないときにはパスワード入力終了と判断することが、複数桁のパスワードを入力できる点で望ましい。

【0009】 更に、本発明では判定手段によりパスワード一致と判定されたときにのみ、オペレーティングシステムを起動し、その後アプリケーションプログラムを読み込み実行することを特徴とする。

## 【0010】

【作用】 本発明では、ペンのタブレットへの接触の有無あるいは指のタッチパネルへの接触の有無を示す検出信号を定期的に出力し、この検出信号に基づき検出される、ペン等でタブレット等を間欠的にタップする時間間隔とタップ回数との組合せをパスワードとして入力するようにしたため、文字認識機能や仮想キーボード機能を使用せずにパスワードの入力ができる。

【0011】 また、本発明では、パスワード一致と判定されたときに初めてオペレーティングシステムを起動し、その後アプリケーションプログラムを読み込み実行されるので、キーボードからパスワードを入力したのと同じ機密保護機構を使用できる。

## 【0012】

【実施例】次に、本発明の実施例について図面と共に説明する。図1は本発明になる入力端末装置の一実施例の構成図を示す。同図に示すように、本実施例はペン1、タブレット2、電源スイッチ3、中央処理装置(CPU)4、不揮発性メモリ5及び磁気記憶装置6からなる。

【0013】タブレット2はペン1が接触した位置のX-Y座標をCPU4へ出力する構成であるが、本実施例では更に一定時間 $t_c$ 秒毎にペン1が接触しているか否かをCPU4へ通知する構成とされている。また、不揮発性メモリ5には、予め機密保護機能プログラム及びパスワードが記憶されている。更に、磁気記憶装置6には、オペレーティングシステムやアプリケーションプログラムが記録されている。

【0014】次に、本実施例の動作について図2のフローチャートを併せ参照して説明する。まず、図1の電源スイッチ3をオンにすると(ステップ11)、CPU4は不揮発性メモリ5より機密保護機能プログラムを読み込み、それをパスワードを入力する処理まで実行し、オペレータにパスワードの入力を促す(ステップ12)。

【0015】これにより、オペレータはペン1でタブレット2をタップする回数及び時間間隔でパスワードを入力する(ステップ13)。すなわち、ペン1がタブレット2にごく短時間接触(タップ)してから次にタップするまでのオフの時間間隔が $n_s$ 秒( $n_s \gg t_c$ )以内であったタップが何回あったかを数え、かつ、上記のオフの時間間隔が $n_s$ 秒以上になった場合は新たにタップ回数を数え直す。また、タップが所定時間 $n_e$ 秒( $n_e \geq n_s$ )以上なかった場合は、パスワード入力終了と判定する。

【0016】このペン1でタブレット2をタップすることでパスワードを入力する方法の一例について更に図3と共に説明する。図3に示す例では、ペン1がタブレット2に最初にタップ(ペン1がオン)してから次にタップするまでに時間 $n_1$ 経過し、以下、時間間隔 $n_2$ 、 $n_3$ 、 $n_4$ 、 $n_5$ 、 $n_6$ 、 $n_7$ 、 $n_8$ で計9回タップし、9回目のタップ後に時間 $n_9$ 以上経過していることを示している。

【0017】ここで、 $n_1 \sim n_9$ のそれぞれには、 $n_1 < n_s$ 、 $n_2 < n_s$ 、 $n_3 < n_s$ 、 $n_s < n_4 < n_e$ 、 $n_5 < n_s$ 、 $n_6 < n_s$ 、 $n_s < n_7 < n_e$ 、 $n_8 < n_s$ 、 $n_e < n_9$ なる関係があるものとする。最初の $n_s$ 秒以上の時間間隔 $n_4$ の直前に $n_s$ 秒以内のタップが4回あり、 $n_4$ 後次の $n_s$ 秒以上の時間間隔 $n_7$ の直前に $n_s$ 秒以内のタップが3回あり、 $n_7$ 後最後の $n_s$ 秒以上の時間間隔 $n_9$ の直前に $n_s$ 秒以内のタップが2回あり、かつ、 $n_9$ は時間 $n_e$ 秒以上であるので、パスワード入力終了と判断されるため、結局この場合のパスワードは“432”となる。

【0018】再び図1及び図2に戻って説明するに、CPU4はタブレット2からのタップの有無の検出信号を上記の如くにパスワードに変換し、変換して得たパスワードが不揮発性メモリ5から読み出した予め登録されているパスワードと同じかどうか照合し(ステップ14)、異なる場合には再度オペレータにパスワードを入力するように促す。そして、パスワードが登録されているパスワードと一致するまで上記のステップ13と14の処理を繰り返す。

【0019】このようにして、CPU4はタブレット2からのタップの有無の検出信号から変換して得たパスワードが不揮発性メモリ5から読み出した予め登録されているパスワードと同じと判定したときには、磁気記憶装置6からオペレーティングシステム(OS)を読み込み起動し、その後アプリケーションプログラムを読み込み実行する(ステップ15)。

【0020】このように、本実施例によれば、ペン1でタブレット2をタップする回数の組合せでパスワードを入力するようにしているため、文字認識機能や仮想キーボード機能を動作させなくともパスワードを入力でき、コンピュータ等の端末装置と同様な機密保護機構を実現できる。

【0021】なお、本発明は上記の実施例に限定されるものではなく、例えば指やスタイラスペンなどでタッチパネルを加圧した位置の座標を入力する入力端末装置にも適用可能である。

## 【0022】

【発明の効果】以上説明したように、本発明によれば、ペン等でタブレット等を間欠的にタップする時間間隔とタップ回数との組合せをパスワードとして入力することにより、文字認識機能や仮想キーボード機能を使用せずにパスワードの入力ができるため、オペレーティングシステムを使用しなくともキーボードと同様にパスワードの入力ができる。

【0023】また、本発明によれば、パスワード一致と判定されたときに初めてオペレーティングシステムを起動し、その後アプリケーションプログラムを読み込み実行されるので、現在のコンピュータ等の端末装置と同様な機密保護機構を実現できる。

## 【図面の簡単な説明】

【図1】本発明の一実施例のブロック図である。

【図2】本発明の一実施例の動作説明用フローチャートである。

【図3】図1の要部の動作説明図である。

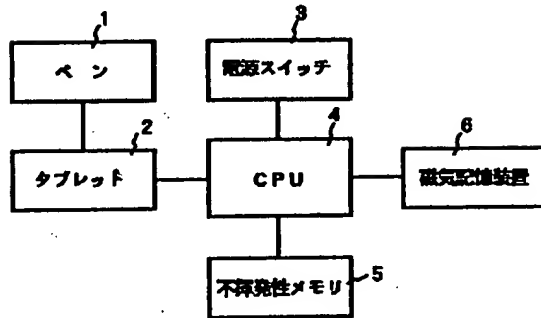
## 【符号の説明】

- 1 ペン
- 2 タブレット
- 3 電源スイッチ
- 4 中央処理装置(CPU)
- 5 不揮発性メモリ

## 6 磁気記憶装置

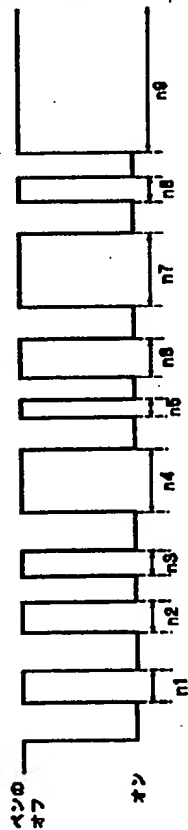
【図1】

本発明の一実施例のブロック図



【図3】

本発明の一実施例の要部の動作説明図



【図2】

本発明の一実施例の動作説明用フローチャート

